Energy Action Plan

Steps to Achieving the State's Goals for Renewable Resources

Joint Meeting
May 22, 2007

Status of California's Renewables Portfolio Standard

Judith Iklé
California Public Utilities Commission

Kate Zocchetti
California Energy Commission

California's RPS is one of the most ambitious in the country

- 20% Renewable by 2010
  - Renewables must also increase by 1% of retail sales per year
  - Applies to Investor-Owned Utilities, Electric Service Providers and Community Choice Aggregators; Publicly-owned utilities must design similar programs, report to CEC
- 33% Renewable by 2020
  - Stated goal of Climate Action Team
  - Legislation pending

RPS Implementation Roles

- The Public Utilities Commission:
  - Determines annual RPS procurement targets
  - Approves utility procurement plans and contracts for eligible energy
  - Calculates the Market Price Referent, a benchmark for contract pricing
  - Determines compliance and potential penalties

- The Energy Commission:
  - Certifies renewable facilities as eligible for the RPS.
  - Designs and implements accounting system to track and verify RPS compliance.
  - Distributes Supplemental Energy Payments.

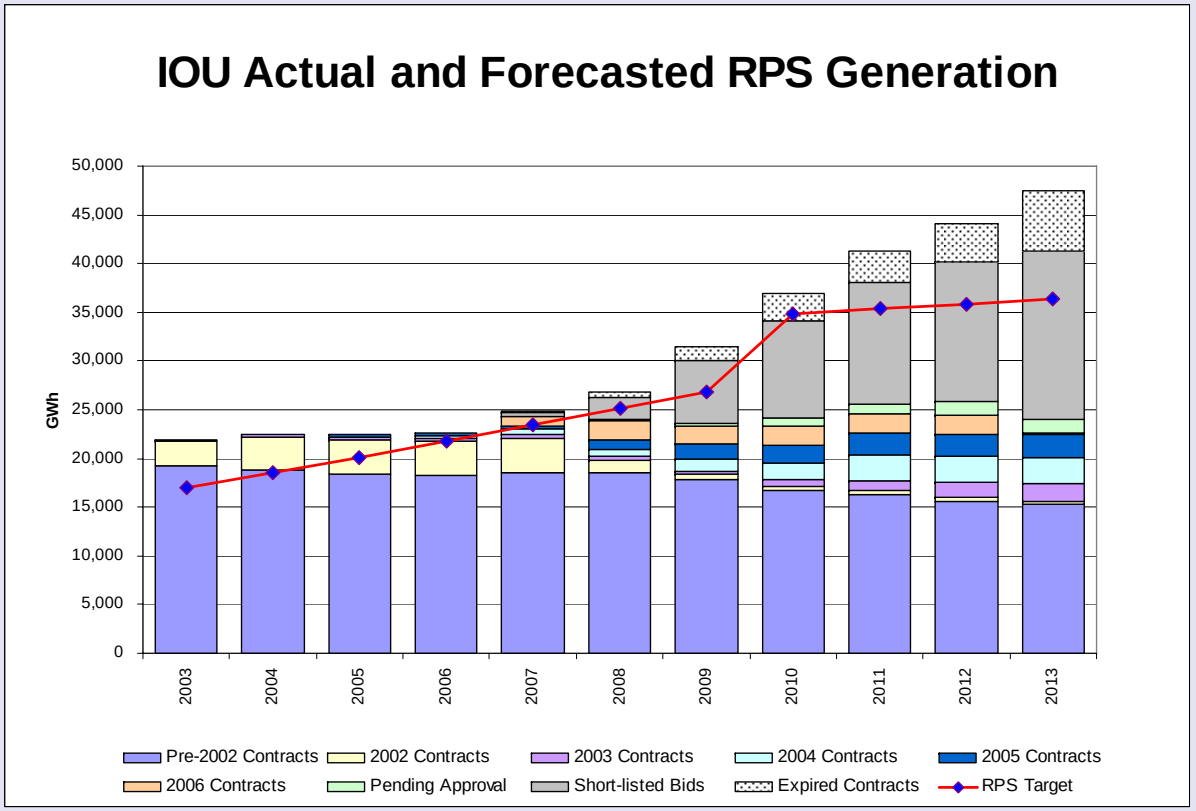
IOUs are actively pursuing RPS – eligible contracts

- 5 RPS solicitations conducted
  - 72 contracts for 2,931 - 4,351 MW approved by CPUC
  - 6 of above contracts - 104 MW - canceled
  - Some contracts re-negotiated - table counts final minimum capacity
- 2007 solicitation will close at end of May

Solicitation Year	PG&E	SCE	SDG&E
2002	4 contracts (119 MW)	5 contracts (268 MW)	15 contracts (239 MW)
2003	3 contracts (44 MW)	8 contracts (687 MW)	1 contract (40 MW)
2004	6 contracts (311 MW)	0 contracts	6 contracts (580 MW)
2005	7 contracts (180 MW)	6 contracts (56 MW)	5 contracts (188 MW)
2006	6 contracts (219 MW)	0 contracts	0 contracts
Total*	**26 contracts (873 MW)**	**19 contracts (1011 MW)**	**27 contracts (1047 MW)**

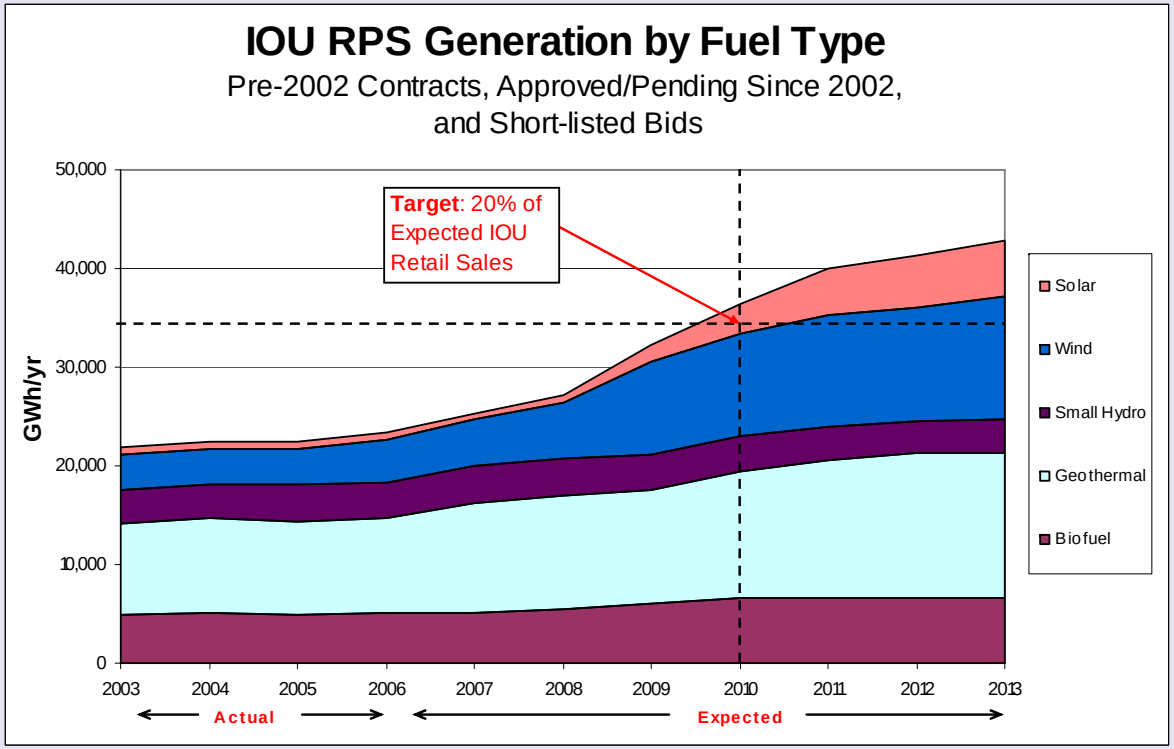
IOUs will likely be close to 20% on a delivered basis by 2010

- IOUs will receive 2007 RPS RFO bids at the end of this month
- There is risk that contracts scheduled to produce by 2010 will not do so



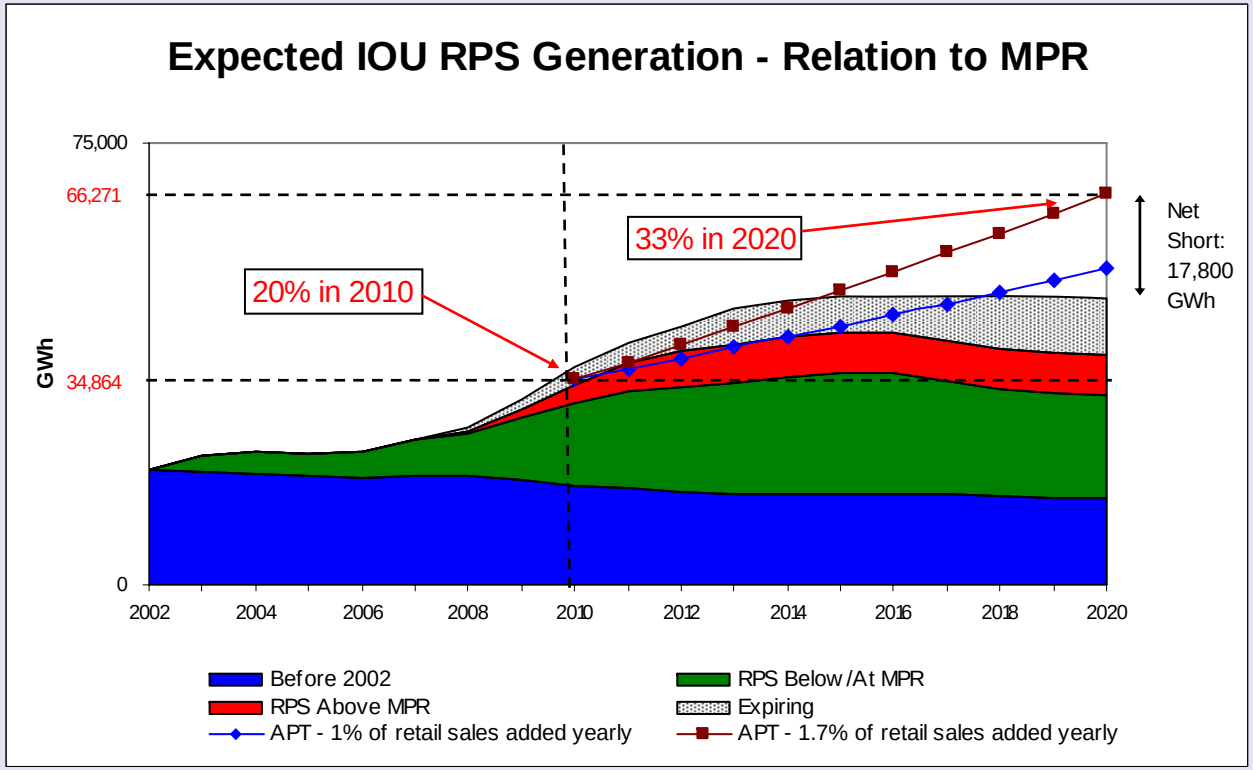
Technologies offer varying benefits and challenges

- Geothermal and wind provide most RPS energy
- Wind price trending up; may open door for solar, geothermal, biomass
- Efficiency Improvements in hydro potential source –legislation pending



Rising prices highlight challenge posed by 33% goal

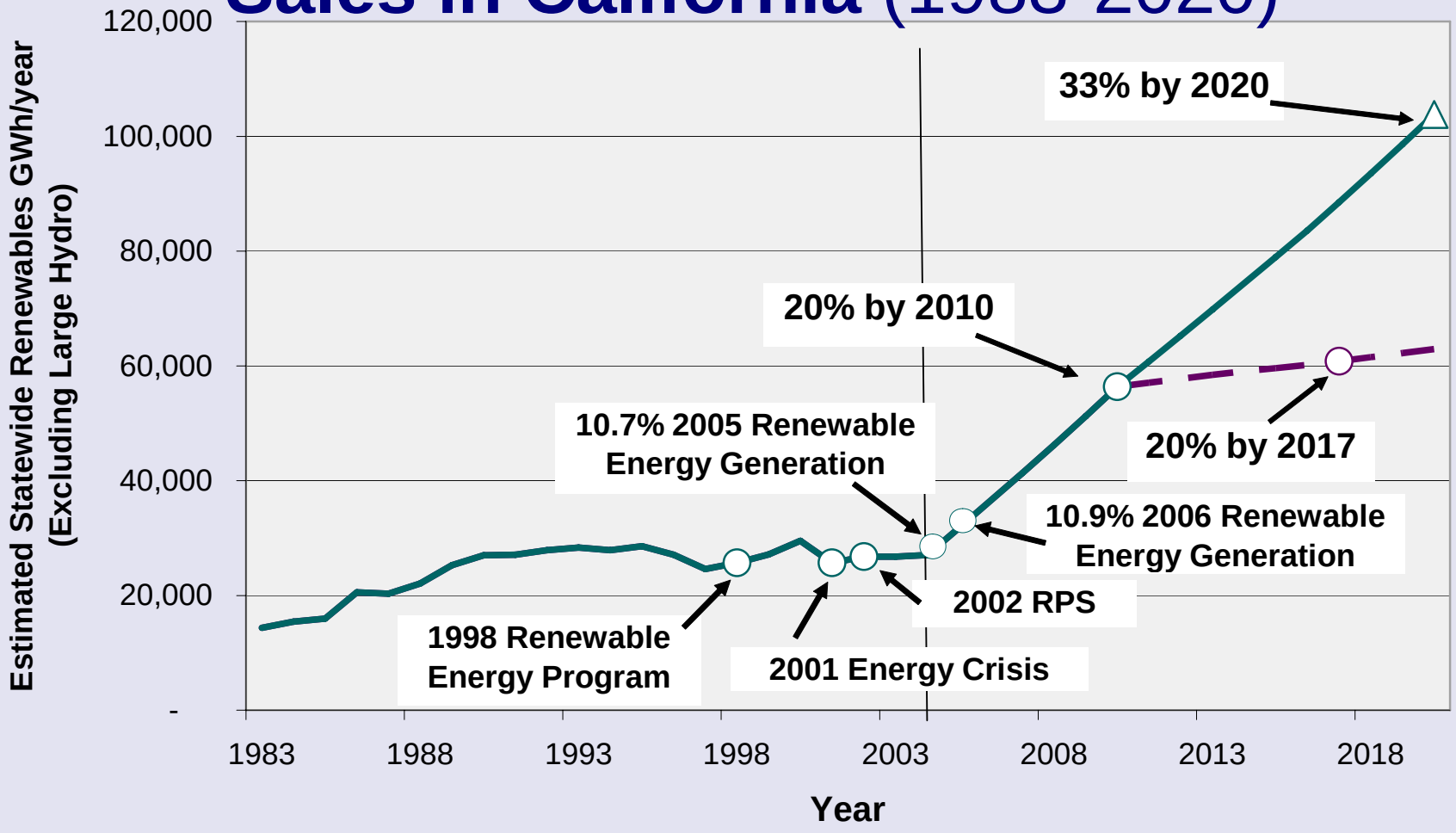
- Above-MPR contracts may deplete SEP funds
- Increase of 1% of retail sales per year will not get IOUs to 33%



PUC is working towards 20% and looking forward to 33%

- Framework for compliance has been established
- Contract managers tracking CPUC-approved projects at each IOU, identifying risks and working with IOUs to remove barriers
- Addressing transmission constraints:
  - Approved nearly $1 billion in transmission infrastructure this year
  - Issued draft resolution proposing a new model of proactive transmission planning for renewables
- AB 32 and a load-based carbon cap may shift the economics of low-carbon energy sources and provide a new incentive for decreasing overall demand

Historical and Projected Renewable Sales in California (1983-2020)



Annual RPS Procurement Verification Report

- Committee Final Report, May 2007
  - Verifies IOUs' RPS-procurement for 2005
  - Reflects revised baseline and 2004 and 2005 procurement targets [CPUC D.07-03-046, March 15, 2007]
  - Results for 2005 annual procurement target (APT) do not reflect any "banked" excess/deficit procurement from previous years:
    - PG&E exceeded APT by 107,059 MWh (APT = 8,543,303 MWh)
    - SDG&E exceeded APT by 220,626 MWh (APT = 604,740 MWh)
    - SCE was short 24,675 MWh (APT = 12,929,076 MWh)
  - Report will be considered for adoption May 23
- Next report will verify IOUs' 2006 procurement and will include small and multi-jurisdictional utilities and electric service providers

Operational Status for Contracted Renewable Capacity (new, repowered, restarted)

	Online (MW)	MW Not Online		Percent MW Online (%)	
		Min	Max	Min	Max
TOTAL	324	1,796	3,294	15%	9%

Source: California Energy Commission, Database of IOU Contracts for Renewable Generation, updated March 22, 2007.

Status of WREGIS

- WREGIS website, www.wregis.org launched March 2007
- WREGIS training for stakeholders scheduled

  Portland, OR – 6/13 Irwindale, CA – 6/19

  Seattle, WA – 6/14 Sacramento, CA – 6/21
- WREGIS estimated to be operational late June 2007

Status of Requests for Supplemental Energy Payments

- To date, two SEPs applications submitted
  - Application for geothermal project contracting with SDG&E: SDG&E failed to provide required data and developer subsequently withdrew application.
  - Application from geothermal project under contract with PG&E withdrawn due to changes in Power Purchase Agreement.

2007 Integrated Energy Policy Report

The report will address 2006 IEPR Update recommendations for the RPS. IEPR Workshops are looking at:

- Wind repowering incentives
- Best practices for coordinating RPS with carbon market design
- Analysis of feed-in tariffs
- Portfolio anlaysis for CA's energy resource planning, including RPS
- Analysis of 33% RPS goal by 2020

Status of California Solar Initiative

Solar Research, Development & Demonstration

Martha Krebs, Ph.D.
California Energy Commission

Jeanne Clinton
California Public Utilities Commission

Public Interest Energy Research

PIER PV Program Overview

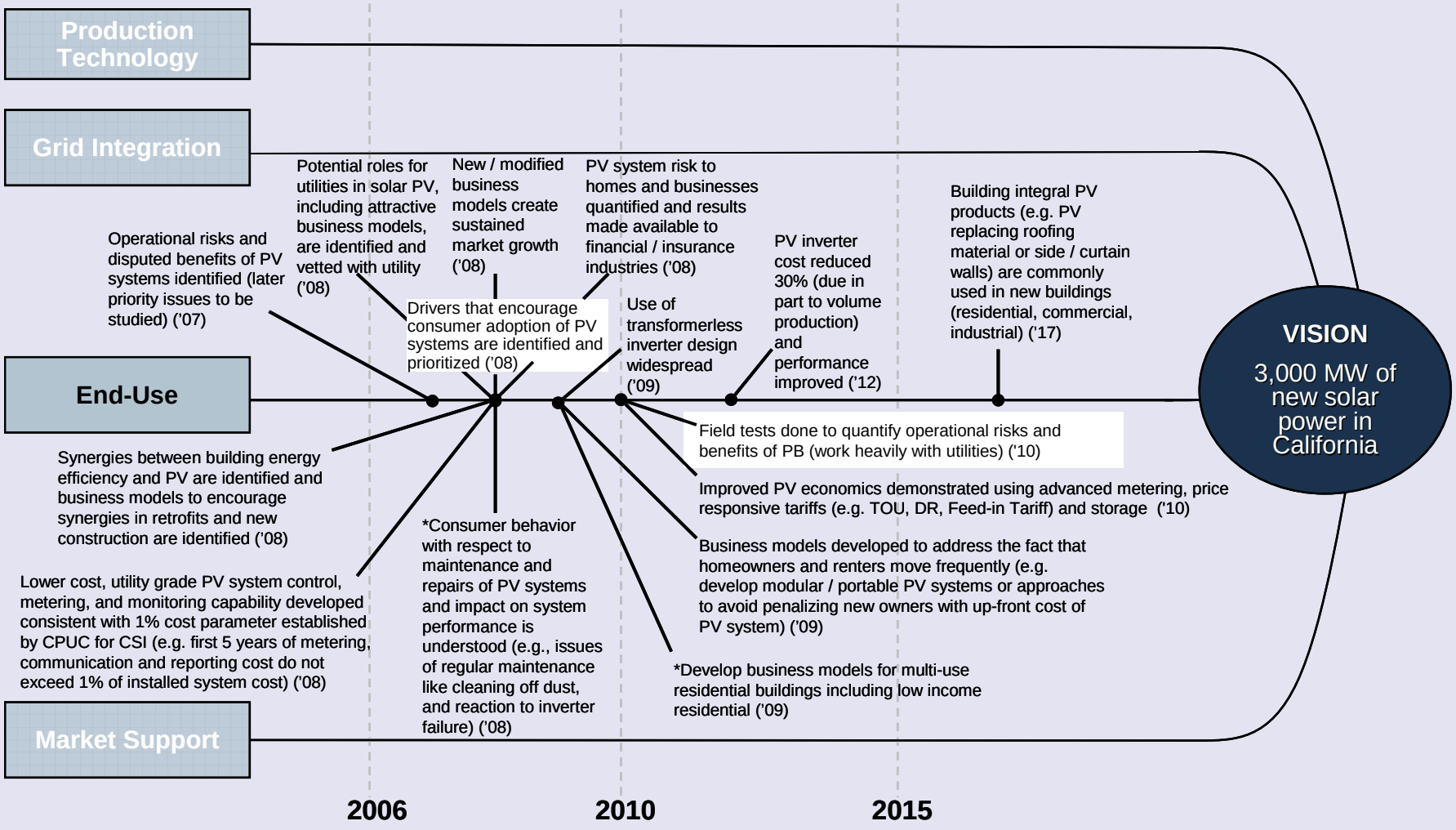
PIER PV Programs

- Goals:
  - Facilitate cost reduction and market uptake through targeted RD&D
  - Support state policy and deployment initiatives
- Strategy:
  - Collaborate with CA industry leaders
  - Respond to stakeholder priorities
- Funding:
  - To date: 19 active and completed projects totaling >$11M in PIER funds
  - 07/08 approved budget: $2.25M, plus funding through cross-cutting programs
- Selected Accomplishments:
  - Early stage development/demonstration by five recent Solar America Initiative awardees: Ammonix, General Electric, Nanosolar, PowerLight, United Solar
  - Development of commercially successful products for commercial, residential and central power…..PowerLight is paying royalties based on sales.

Program Plan Update

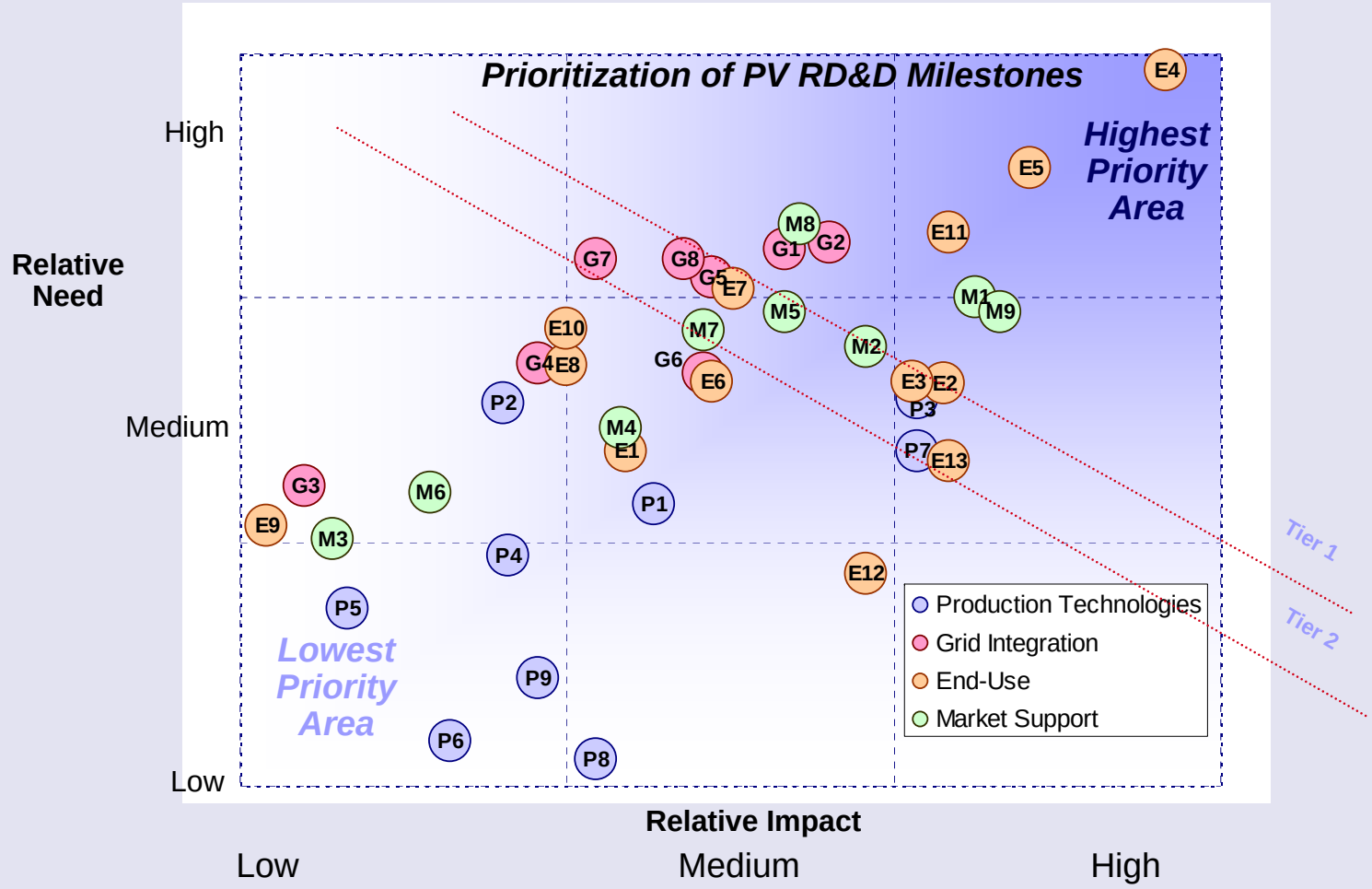
- Purpose:
  - Balance between near and long term opportunities
  - Broaden program scope to address:
    - Grid integration
    - Market support
    - End use
  - Support CSI planning
  - Support New Solar Homes Partnership Planning
  - Involve Industry/utility/CPUC stakeholders in planning process
  - Consider relative impact and relative need
- Context:
  - Builds on PIER Renewable Energy Technologies Program Roadmap
  - First of a series of planned annual updates

PV RD&D Framework



Prioritization Results

The analysis revealed the highest ranking milestones (i.e., Tier 1) based on the relative need for PIER funding and potential impact in meeting CSI goals.



Near Term Focus

- A grant solicitation is planned for late September/Early October for 07/08 projects
  - High priority milestones targeted
  - Significant interest in PV community
  - Address as many milestones as possible with available funds
- Planning and scoping efforts are underway consistent with the PIER PV RD&D plan

Energy Action Plan

California Solar Initiative

Proposal for Research, Development and Demonstration Program

Jeanne Clinton
Clean Energy Advisor
CPUC

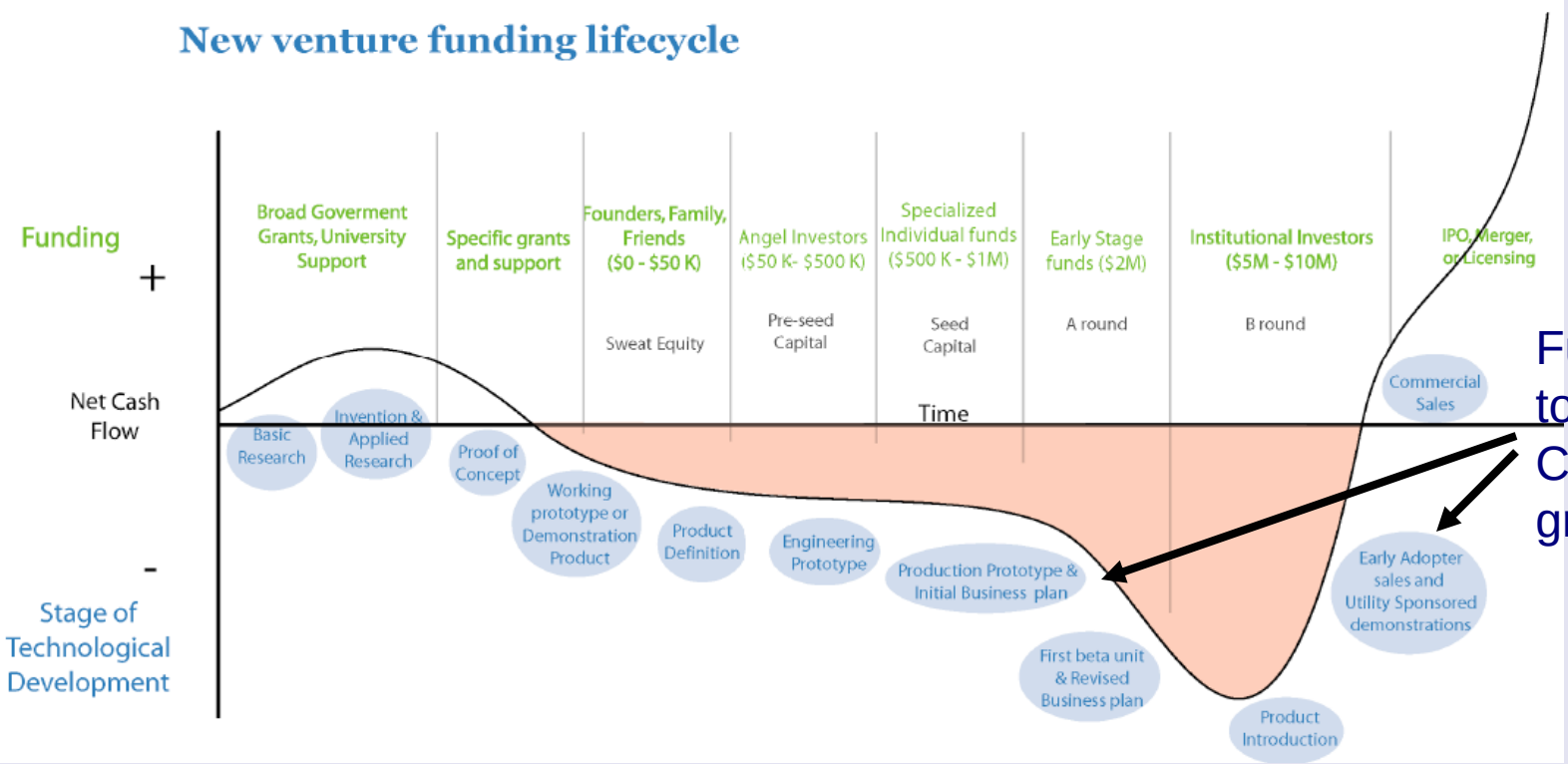
Joint Meeting
May 22, 2007

RD&D Program Goals and Objectives

- **Goal:**
  - Support efforts to build a sustainable and self-sufficient solar industry in California by funding solar energy technology and demonstration projects
- **Objectives:**
  - Move market from the current retail solar price of $9/watt or $0.30/kWh into cost competitiveness with retail price of electricity
  - Facilitate growth of installed solar DG from current levels of 40MW/yr to 350MW/yr
  - Support innovation necessary to ensure California achieves goal of 3,000 MW of installed solar DG by 2016
- **Proposed Funding Strategy:**
  - Allocate up to $50 million for Research, Development and Demonstration over the course of 10 years
  - Innovative technologies that will increase value of solar
  - Technologies that will directly benefit California
  - Technologies where funding is lacking
- **Program Status**
  - Staff Proposal 02/07 Draft, 04/07 Revised
  - Written Comments received 04/07
  - Proposed Decision 07/07 (anticipated) for 08/07 CPUC Agenda
  - Program Launch Q4 2007
  - RFP Solicitation Q4 2007

CPUC RD&D Funding Strategy

- One of the reasons for expanded CPUC Solar RD&D funding is to fill the investment "Valley of Death" to meet 3000 MW solar goal



Funding gap to be filled by CPUC RD&D grants

Identify and support technologies and demonstration projects that improve the economics of solar technology

Provide funding for projects that directly benefit California

Support projects that seek to leverage California's wealth of information on solar energy

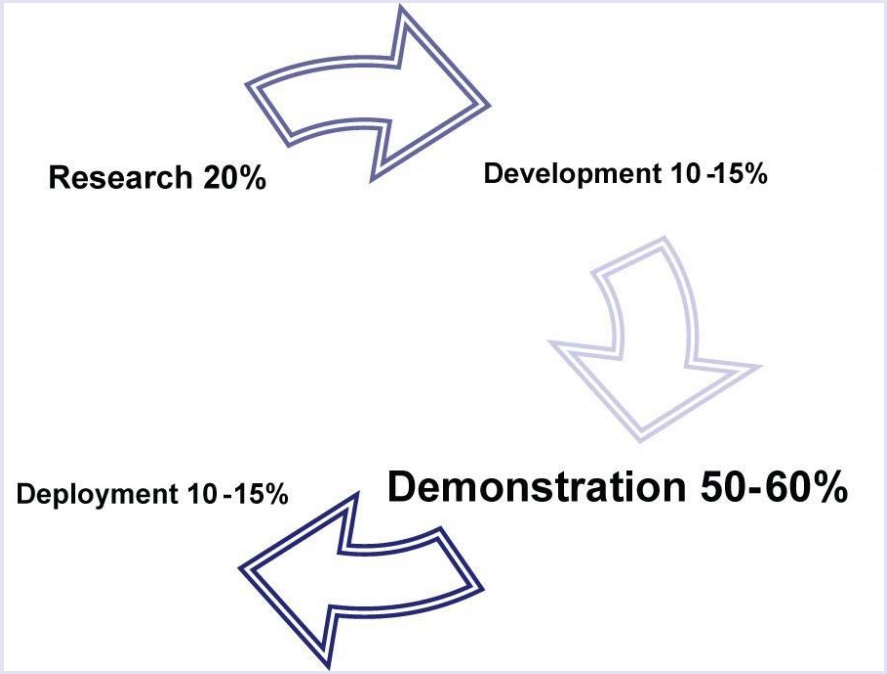
RD&D Strategy Principles

Focus RD&D funding on gap areas where funding is lacking

Target high-impact RD&D activities that face barriers to adoption because of under-funding

Proposed Allocation of RD&D funds by Product/Service Development stage

- Allocate funds among four project stages
  - **with greatest emphasis on the Demonstration stage,**
  - preceding full deployment of technology or service solutions

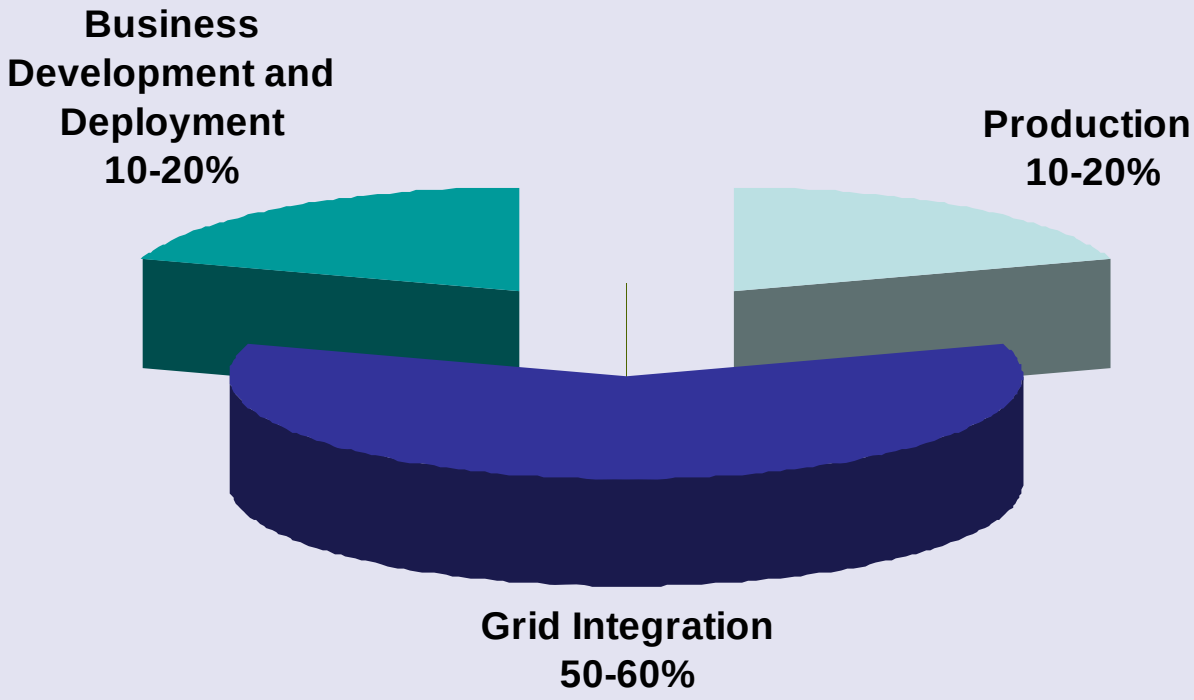


Definitions of Proposed RD&D Project Stages

- **Research** stage: basic and fundamental research that provides the foundation for future applied research
- **Development** stage: largely focused on the business enterprise component of moving technologies to market
- **Demonstration** stage: the bridge from technological development to market deployment
- **Deployment** stage: expands production scale, sales/installation volume, or market penetration of technologies and services

Proposed Target RD&D Strategic Activity Areas (using results of PIER milestone priorities)

- The CSI RD&D program has identified three target RD&D Activity Areas

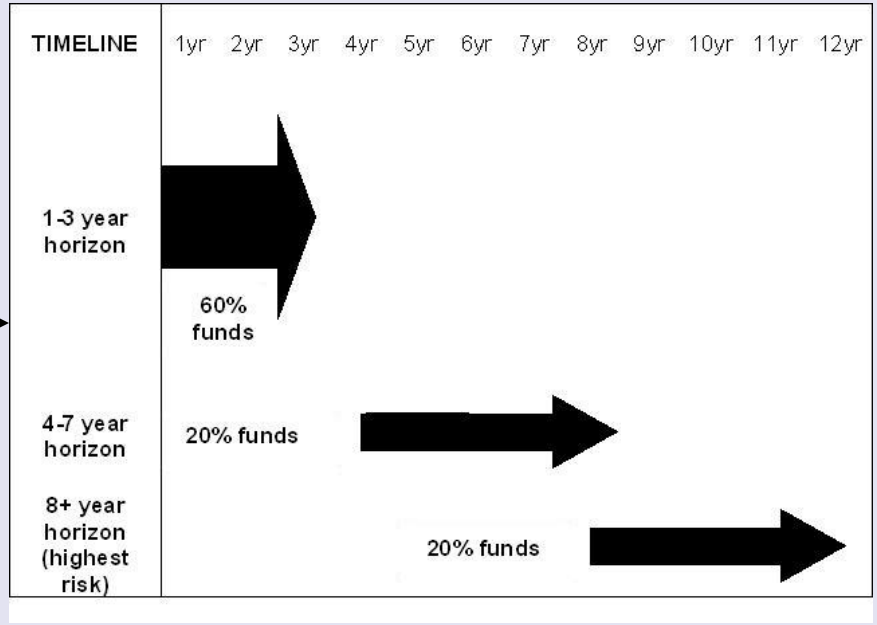


RD&D Target Activities -- Potential Projects

- Production Technologies
  - Distributed concentrating PV systems
  - Building Integral PV
- Grid Integration
  - PV system storage
  - Identification of high-value locations for DG PV on T&D system
- Business Development and Deployment
  - Business models that include roles for utilities in solar PV projects
  - Utility grade PV system control, metering, and monitoring
  - Improving PV economics through price responsive tariffs

Proposed CSI RD&D Risk Allocation and Cost Sharing Requirements

- To achieve meaningful results within the next 10 years, staff proposes a **risk allocation timeline**:



- Staff's proposed **cost-sharing targets**:
  - **Development:** **min. 10% project cost from non-CPUC source**
  - **Deployment:** **min. 50-75% project cost from non-CPUC source**
  - **Demonstration:** **min. 50-75% project cost from non-CPUC source**

CPUC/CEC Expected Collaboration

- **Some targeted activities <u>support</u> CEC's initiatives**
  - CPUC RD&D can co-fund with CEC meritorious projects
  - CPUC RD&D and CEC may fund different, but complementary technologies:
    - Grid Integration - CPUC funding priorities: PV Minigrids
    - Business Development and Deployment - CPUC funding priorities: Operational risks and benefits studies of PV
- **Other CPUC targets may have no CEC involvement**
  - Production Technologies – CPUC funding priorities: Building Integrated PV
- **Explore use of joint CPUC/CEC semi-annual public meetings** with:
  - USDOE, NREL, other states, industry stakeholders

Proposed RD&D Program Management

- Day-to-day Program Management outsourced to a third-party administrator
- Energy Division staff, with input from IOUs, help select the Program Manager
- Program Manager and Energy Division work together to develop grant solicitations
- CPUC CSI RD&D Program Plan sets forth the substantive rules for grant solicitations